

# Grade 4 Mathematics

## Data Analysis, Probability, and Discrete Math:

### Lesson 7

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol (  ) by them.

#### *Purpose of Lesson 7:*

- In this lesson, the tutor and the students will
  - ✓ read a line graph accurately to answer questions, and
  - ✓ draw conclusions based on data given in a line graph.

#### *Equipment/Materials Needed:*

- Copies of Student Sheet 118
- Paper and pencils
- Chalkboard

#### *Preparations before beginning Lesson 7:*

- Run one copy of Student Sheet 118 for each student.
- Have paper and pencils available.

## *Lesson 7: Data Analysis, Probability, and Discrete Math Measurement*

Say:

**In this lesson, you will look at line graphs. *Line graphs* are used to show trends or changes over time. On line graphs, time is usually shown on the horizontal axis. Time can be measured in seconds, minutes, hours, days, weeks, months, years, etc.**

 Give students Student Sheet 118.

Say:

**Let's look at the first graph.** Discuss the title, labels, scales, a point, and lines.

 Have them answer questions 1 – 15.

Answers:

1. the daily high temperatures for one week
2. Thursday
3. Saturday
4. 95° F
5. It increased three degrees.

Say:

**When you look at the lines in a line graph, you can tell whether something has increased, decreased, or stayed the same over time. Let's look at the second graph.**

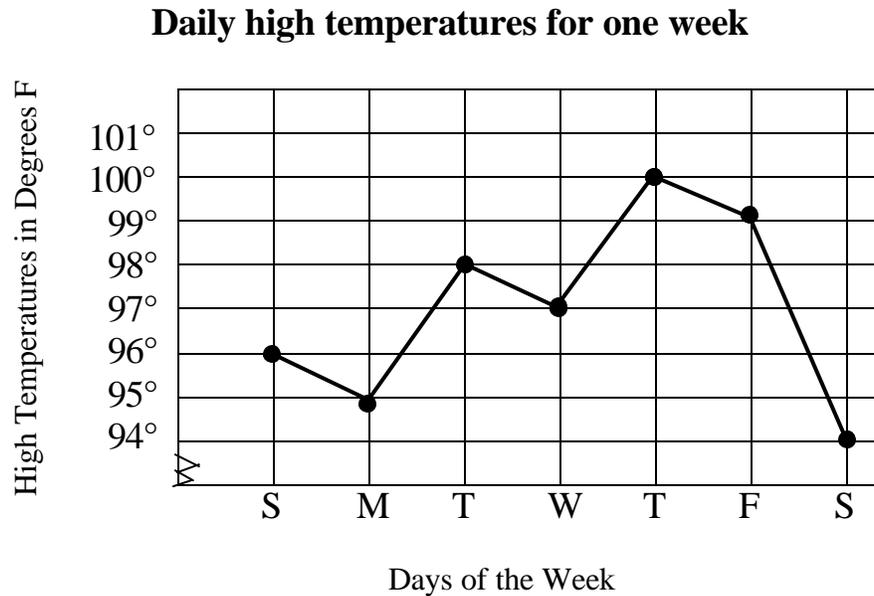
Answers to 6-15.

6. Hiking in the Smokies
7. time
8. Time is increasing. It is getting later.
9. distance from the Rangers' station
10. 2 miles
11. The distance increased by 10 miles.
12. The distance stayed the same. The group may have had lunch.
13. The distance decreased by 2 miles.
14. The distance stayed the same. The group may have made a camp for the night.
15. 4 miles

 Have one student summarize today's lesson. Emphasize that line graphs are used to show changes over time.

## Student Sheet 118 (Data Analysis: Lesson 7)

Each part of a line graph has a purpose. Look at the line graph below.



The **title** of the graph tells what it's about.

The **labels** on the bottom and the side of the graph tell what kinds of facts had been gathered.

The **scales** along the bottom and side tell how much or how many.

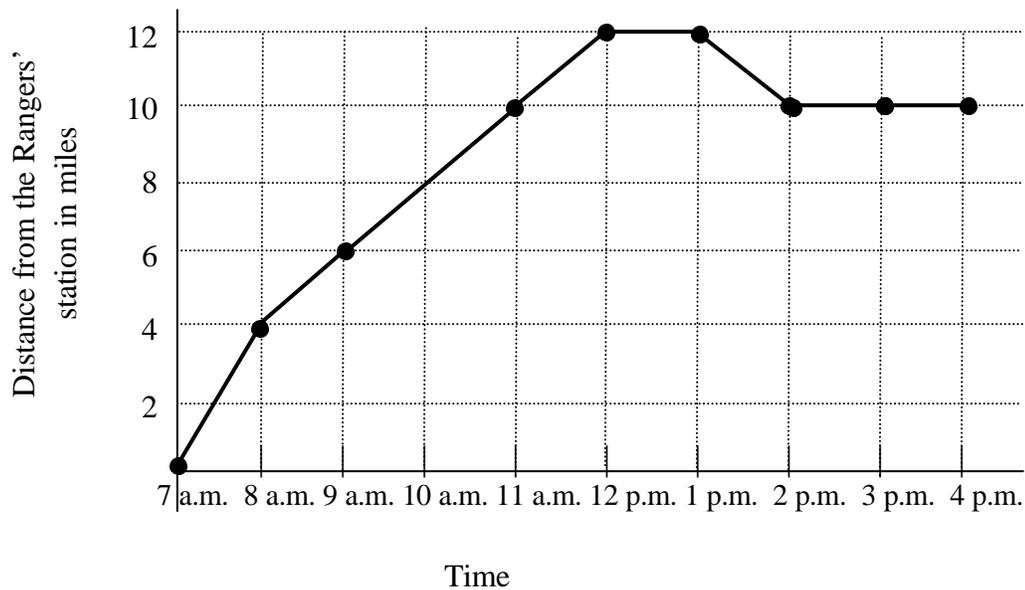
The **points**, or dots, tell the facts.

The **lines** connecting the points give estimated values about the line graph.

1. What is the graph about?
2. Which day had the greatest high temperature?
3. Which day has the lowest high temperature?
4. What was the high temperature on Monday?
5. What happened to the temperature between Monday and Tuesday?

**Student Sheet 118 (Data Analysis: Lesson 7) (continued)**

**Hiking in the Smokies**



6. What is the graph about?
7. What is shown on the horizontal axis?
8. What is happening to time on the graph?
9. What is shown on the vertical axis?
10. What is the scale for distance from the Rangers station?
11. From 7:00 a.m. to 11:00 a.m., what happened to the distance from the Rangers' station?
12. What happened to the distance from the Rangers' station between 12 p.m. and 1:00 p.m.? What might be the reason?
13. What happened to the distance from the Rangers' station between 1:00 p.m. and 2:00 p.m.?
14. What happened from 2:00 p.m. until 4:00 p.m.? What might be the reason?
15. How many miles were hiked from 7:00 a.m. to 8:00 a.m.?